InterCAT Technical Working Group Meeting
Minutes
November 19, 1998

Agenda Review and TWG Activity Summary

Chair Paul Zschack opened the meeting by thanking Dean Chapman and Dean Haeffner for their past work with the TWG. Zschack then previewed the meeting agenda and offered some perspective on the role to the TWG within the APS, reviewing the origin and the mission of the group. He briefly discussed the subgroups that have been formed within the structure of the TWG in recent years. Zschack proposed activating four subgroups that are of timely importance to the user community.

Proposed Subgroup	Subgroup Leader
Top-off Operations	John Quintana (DND-CAT)
Storage Ring Operations Modes	Jon Tischler (UNICAT)
Detectors	to be identified
Beamline Diagnostics	to be identified

Zschack asked the group to consider volunteering as leaders and/or participants in these subgroups.

CAT Update reports planned for upcoming TWG meetings include the CATs and sectors listed below. CAT presentations will be announced in TWG meeting agendas.

CAT Name	Sector(s)
SRI-CAT	1-4
μ -CAT	6
MHATT-CAT	7
CMC-CAT	9
MR-CAT	10
BESSRC-CAT	11-12
BioCARS (CARS)	14
ChemMatCARS (CARS)	15
Bio-CAT	18
SBC-CAT	19
COM-CAT	32

Facility Reports

APS Update/News
Steve Davey told the group that there is a listserver available to distribute information about upcoming user seminars. To sign up, interested parties should send an e-mail to listserv@aps.anl.gov with the message “ADD user seminars”.

Davey reported that Oxford has expressed interest in continuing to service cryo pumps for CATs at the APS. The service, which consists of four major maintenance visits by an Oxford technician per year, is expected to cost approximately $32K per year for service to 10 CATs. Any emergency service and repairs throughout the year would be done by the Beamline Operations group. One option would be to have the Beamline Operations group perform both the major maintenance work and the “as needed” emergency-type work Mohan Ramanathan stated that additional technicians would be trained to meet staffing needs if the CATs opt to keep the maintenance work “in house” at the APS. Many CATs indicated their willingness to support the XFD effort to provide emergency servicing, and would consider using the Operations Group for routine maintenance if this helped build the required expertise. Whichever maintenance choice is made, the majority of CATs need to support the selection; Oxford requires a minimum of 10 participants in its service

plan. A good estimate of the annual cost for having the maintenance function provided by the APS is needed before a choice can be made.

The APS stockroom will stock certain chemicals in small quantities. Since all CATs may not have controls in place to appropriately handle all stocked chemicals, potential problems exist. To help CATs manage the unannounced arrival of chemicals at their beamlines, the stockroom will be implementing a system under which only users authorized by their CAT will be allowed to withdraw chemicals from the APS stockroom. CATs will be asked to identify a list of members allowed to purchase chemicals from the stockroom. Input regarding stockroom issues can be provided to members of the Stockroom Advisory Group (Bob Fischetti, Chuck Kurtz, Larry Lurio, Bill McHargue, Gary Navrotski, John Quintana, Paul Zschack).

Liquid Nitrogen Distribution

Bob Ferry reviewed the timeline of the centralized liquid nitrogen system project. The project was re-opened in September 1998, when the system plan was upgraded and the vendor selection process begun. The selected vendor will be responsible for both the design and fabrication of the four main modules (containing a total of four dewars) of the delivery system. The projected timeline includes the following milestones:

Milestone	Projected Date
Contract award	3/1/99
Piping fabrication	4/15/99 - 6/10/99
Installation	6/1/99 - 7/7/99
System begins operations	7/20/99

Ferry stated that he will provide progress reports at upcoming TWG meetings. He told the group that piping will be set up to be capable of any modification method a CAT might choose for access to the liquid nitrogen. Ferry said that it is not yet known how frequently the dewars will be refilled.

Tungsten (W) slits DI Water Interactions

Tunch Kuzay reported that two L5-90 slits (from 1-ID and 3-ID) were recently found to have developed extensive corrosion/erosion within their cooling channels. The slit component materials (a special UHV W-Fe tungsten, Cu, and a special Loctite pipe sealant) were all deemed to be inert with respect to DI water. No other cases of this type of corrosion/erosion have been found IN LITERATURE while researching this phenomenon.

Data is being collected to investigate several variables that may play a role in the problem, including water temperature in and out of the channels, conductivity, etc. It is strongly suspected that dissolved O_2 in the DI water may be oxidizing the Fe and stripping out of the Wfe material. The DI water at the 3-ID beamline closed-loop had 2-5 ppm dissolved O_2 content, a significantly higher level than the DI water for the main APS ring which has a level of only 20 ppb dissolved O_2. The low level of dissolved O_2 in the main ring DI water is achieved by recently implementing a blanket of inert gas over the DI supply.

Unused L5-90 slits in the possession of users will have their cooling channels Ni-plated before use (Ni is known to plate evenly and without pitting). Three specimens are currently being test-plated to check the efficacy of the plating process. New slits will be constructed using a new design that use brazed copper tubes for the DI water lines preventing a direct DI water / W contact. Some L5-90 units that are currently in service are being checked. CATs concerned about dissolved O_2 levels in their DI water can have the levels tested by the APS. CATS are urged to implement strict EPS interlocks on Tungsten slits on their Beamlines.

Top-off Operations

Tony Rauchas briefly reviewed the top-up mode logistics and discussed some of the “real world” effects being seen, such as the transient orbit effects (due to the fringe fields of the thick septum magnets) and transient emittance effects (due to kicker magnets having to be set up to compensate for SR non-linear optics). The top-up mode test conducted on 11/10/98 was problematic in that the time between injections

was variable. The next test will be conducted with a fixed period of time (60 sec.) between injections and will provide four hours of actual top-up operation. The injection gate signals will still be provided.

CAT Reports

PNC Activity Report: Steve Heald's report was postponed until the next TWG meeting.

Discussion Items

Top-off Studies
John Quintana (DND-CAT) presented a sector-by-sector summary of experiments, tests, and observations from the 11/10/98 top-off test. Many CATs are still in the process of analyzing the collected results. In general, the user population felt that the two-hour test time was insufficient and was without adequate leadtime to conduct very meaningful tests. Quintana also summarized some preliminary sentiments heard around the experiment hall regarding top-up operation, including the following: gating signals add additional, unwanted complexity to experiments; constant current is not a critical factor, but constant time parameters are very important; some new detectors cannot handle the gating signals; this mode of operation could be intimidating to inexperienced users; there are concerns about keeping optics warm; and, users would prefer stability over flux (need to determine acceptable fill parameters), etc. Quintana stated that the user community is grateful to the APS for exploring new modes of operation, and that users have a responsibility to provide input and feedback in order to ensure that facility performance is meeting the needs of the researchers using it.

Gerd Rosenbaum (SBC-CAT) presented a summary of quad diode array observations made on SBC's ID beamline during the top-up test. Some discussion was held regarding the ramifications of top-up mode on experimental set-up, hardware, and data collection. Wilfried Schildkamp (CARS) overviewed the layout of CARS BM beamline to illustrate where the impact of top-up operation was observed during their observations of Io fluctuations seen at the crystal.

After much discussion, it was determined that the next top-off studies should be tentatively scheduled for Monday, November 30, only if the vertical fast real-time feedback system is available. Since the feedback was not working during the first testing period, the full impact of top-off operations could not be separated from other beam instabilities. The next testing period will be structured to facilitate collection of data during kicker magnet pulsing, during septum magnet pulsing, and during combined kicker/septum magnet pulsing.

Next Meeting
The next TWG meeting will be held December 17, 1998, in conference room A1100. CAT updates will be provided by Steve Heald (PNC-CAT) and Mark Beno (BESSRC).

Action Items:

1. Distribute information about how to subscribe to the user seminar listserver to the TWG mailing list and on the TWG WWW page (S. Davey).

2. Estimate the annual cost of providing cryo pump maintenance services “in house” at the APS (M. Ramanathan).

3. Conduct a survey of the CATs to determine which form of service/maintenance plan (Oxford or the Beamline Operations group) is preferred (S. Davey).

4. Investigate scheduling the next top-off mode test for Monday, November 30, 1998 (T. Rauchas).